## PHILLYSTRAN - A Non-metallic Guy

by Fred Hopengarten, K1VR

Several members of the Yankee Clipper Contest Club have looked closely into the question of using a non-metallic guy wire. There are several advantages:

- It avoids the effort, and reduction in mechanical integrity, of inserting egg insulators into guy wires.
- With no egg insulator, another collection point for ice and snow is removed.
- It eliminates the worry about breaking up guy wires into non-resonant lengths. One club member is currently suffering from a 15 meter beam, mounted down the tower, which won't work properly. He suspects resonance with a close-by guy wire.
- It permits slopers to be mounted in virtually the same plane and direction as a guy wire.
- Guy wires will no longer have the potential to act as a reflector. This was relevant at K1VR, where a microwave path crosses overhead, and a satellite TV dish sits nearby the tower.

Purchasing entirely from the factory, however, can almost triple the cost of a guying system when compared to steel. So we set about to discover the best way to order Phillystran, a product of Philadelphia Resins, of Montgomeryville, PA. The product can be order through several amateur distributors, as well as Channel One (the author's company).

### The Cable

It is not necessary to order a whole roll, as is true with steel. It is possible to simply add up the cable lengths which will be necessary, and order that total length. It is a good idea to order 2-3 per cent extra to deal with the potential of mismeasuring, or the need to recut if the hacksaw slips.

Phillystran can be cut with a sturdy scissors or a hacksaw.

If cut-to-length pieces are desired, the factory charges a fixed fee "per cut", not so much for the cost of cutting, but rather to cover the cost of measuring and rolling up separate lengths. Since cutting is easy, the best idea is to order the total length as one piece.

### End Fittings

Ends are made by Reliable Electric, and available through the cable manufacturer. Essentially, they have a cone, a collar, and a bail. By moving the collar away from the large end of the cone, toward the small end of the cone, it is possible to simply squeeze the bail and it will come out. This means that attachment to the tower, or to torque bars, is quick and easy.

Factory labor for installing the end fittings is expensive, and can easily add 30 per cent to the cost of the guying system. It is, instead possible to do the end fittings yourself. For the typical radio ham, this is recommended and will save a considerable amount of money.

Philadelphia Resins provides good instructions for end fitting assembly, complete with photographs. Ask for Technical Bulletin No. 356. Assuming 12 minutes per fitting, the typical system of three sets of guys--18 end fittings--can be installed in an evening, a savings in the neighborhood of $280.00.

The price for factory installation of an end fitting is $15.60, for a single fitting. By contrast, a potting kit, at 20 pours per kit, costs only $9.00. This allows for the 18 fittings our typical ham requires, and a little spillage too.

For a sense of total costs, see the following chart.

Typical Costs for an Amateur Radio Installation

| | | | |
|---|---|---|---|
| 1000' | Phillystran HPTG 4000 (equivalent of 3/16 EHS) | $ .46 | $460.00 |
| 18 | End fittings (3 sets of guy wires) | 6.26 | 112.68 |
| 1 | Potting kit | 9.00 | 9.00 |
| | Shipping | | 30.00 |
| | TOTAL | | $611.68 |

## Abrasion and Vandalism

The Kevlar center strands, which provide for the strength of the guy, are covered with 30 mils of polyethylene, effectively reducing concern about tree branches wearing away the outer cover. In addition, the Kevlar (a trademark of DuPont) has good abrasion resistance itself.

Nonetheless, standard guy wire of Extra Heavy Strength (EHS) steel is recommended up to a height of 12-15 feet above ground to avoid a situation in which a local prankster attacks the cable with his Bowie knife. At such low heights however, the presence of steel will not negate the advantages of non-metallic guy wire as discussed above. In addition, since the steel line is cheap, the cost of a total Phyllistran installation is reduced.

## Partial Use

Nowhere is it written that just because one needs non-metallic guying at the top of a tower, or at its middle, that it is necessary to use the material throughout the installation. It is eminently reasonable to use Phillystran for the top, or top two guy sets, and to do the rest in steel. This may be appropriate where four sets of guys are required, and the lower two sets are sufficiently far away from antennas that the cheaper steel guying can be used.

## Distribution

A few ham dealers carry Phillystran. Most, however, simply take your order and then special order it from the factory for drop shipment to your home. Deliveries are typically 7-21 days, depending on whether the factory has run the size required lately. Terms are usually (as is true with most of the ham world today) cash in advance. No one does much volume in Phillystran, so few discounts are available. The whole company is only in the range of $5 million in sales.

Continued on Page 16

| CALL | NAME | 20 | 40 | 80 | T'L | MU | SCORE | AREA | TEAM |
|---|---|---|---|---|---|---|---|---|---|
| K7RI (K7SS) | Danny | 164 | 136 | 31 | 331 | 51 | 16,881 | WA | |
| K7GM | Rick | 99 | 90 | 60 | 249 | 37 | 9,213 | AZ | WASP |
| N7AM | Jack | | | | 181 | 33 | 5,973 | WA | |
| NL7P | Dave | 93 | 26 | 7 | 126 | 39 | 4,914 | AK | |
| K8MR | Jim | 57 | 129 | 80 | 266 | 40 | 10,640 | OH | IC |
| N8II | Jeff | 60 | 116 | 86 | 262 | 38 | 9,956 | WV | |
| KW8N | Bob | 41 | 137 | 95 | 273 | 35 | 9,555 | OH | NOARS |
| WB8MZZ | Mike | | | | 248 | 35 | 8,680 | OH | |
| KN8P | Dave | 27 | 117 | 88 | 232 | 35 | 8,120 | MI | |
| W8LNO | Joe | 43 | 88 | 74 | 205 | 36 | 7,380 | OH | Popguns |
| K8AZ | Tom | 47 | 95 | 58 | 200 | 34 | 6,800 | OH | NOARS |
| K8DB | Dennis | 55 | 79 | 66 | 190 | 35 | 6,650 | OH | NOARS |
| W8CAR | Dan | 33 | 95 | 59 | 187 | 34 | 6,358 | OH | NOARS |
| KB8LH | John | 42 | 92 | 53 | 187 | 34 | 6,358 | OH | NOARS |
| N8ATR | Pete | 35 | 70 | 71 | 176 | 34 | 5,984 | OH | NOARS |
| WB8VPA | John | 38 | 80 | 36 | 154 | 32 | 4,928 | OH | NOARS |
| WD8MOV | Dave | | 48 | 53 | 101 | 29 | 2,929 | OH | NOARS |
| N8AHK | Tim | 18 | 56 | | 74 | 27 | 1,998 | OH | NOARS |
| KJ9W | Dave | 67 | 143 | 81 | 291 | 40 | 11,640 | IL | Ill Wind |
| K9VV | Fred | | | | 277 | 42 | 11,634 | IL | |
| K9BGL | Karl | 53 | 115 | 65 | 233 | 37 | 8,621 | IL | Popguns |
| WAØAVL/9 | Scott | 53 | 99 | 73 | 225 | 36 | 8,100 | IL | Ill Wind |
| KK9V | Mike | | | | 120 | 31 | 3,720 | IN | |
| WØUA | George | 107 | 136 | 87 | 330 | 39 | 12,870 | CO | IC |
| KRØY | Jeff | 65 | 150 | 79 | 294 | 41 | 12,054 | MO | IC |
| NØSS | Tom | 64 | 126 | 73 | 263 | 42 | 11,046 | MO | Popguns |
| WAØTKJ | Dean | 75 | 122 | 75 | 272 | 40 | 10,880 | KS | Popguns |
| WØYK | Ed | 95 | 118 | 72 | 285 | 37 | 10,545 | CO | IC |
| KØRWL | Larry | 50 | 105 | 67 | 222 | 39 | 8,658 | MO | Popguns |
| KMØL | Steve | 45 | 99 | 54 | 198 | 36 | 7,128 | MO | Popguns |
| KUØG | Jim | 38 | 77 | 65 | 180 | 34 | 6,120 | MO | Popguns |
| KBØX | Jim | 60 | 74 | | 134 | 34 | 4,556 | MO | Popguns |
| KFØA | Bruce | 72 | 52 | 15 | 137 | 31 | 4,247 | ND | |

Check Log: WA7MEL

Continued from Page 18

Conclusions for Contesters

Phillystran is not cheap, but it is worth it. Do the end fittings yourself. If using four sets of guys, consider using steel for the bottom set.

Editor's Note: The above article appeared in abbreviated form in th February YCCC Scuttlebutt, I am told. For your information, 1000 feet of guy cable is sufficient to guy 90 feet of Rohn 25 or almost enough to guy 100 feet of Rohn 45 per manufactor's specs. Channel One is at 79 Massasoit Street, Waltham, MA 02154.